

## Curriculum Vitae

### Sylvie Corteel

Chargée de recherche CNRS  
LIAFA, Université Paris-Diderot, Paris, France.  
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Date of Birth : 02/04/1974  
Married, two children

Citizenship : French  
Fluent in English

#### Research interests :

- Enumerative and bijective combinatorics
- Partitions and  $q$ -series
- Combinatorics and statistical physics
- Probabilistic and asymptotic combinatorics
- Algebraic combinatorics

#### Positions :

- Jan 06- : Chargée de recherche CNRS, Première classe (Tenured Associate Researcher), LRI, Université Paris-Sud, Orsay, France.
- Oct 2001-Dec 2005 : Chargée de recherche CNRS, Deuxième classe (Tenured Assistant Researcher), PRISM, Université de Versailles, France.
- Sept 2000-Sept 2001 : Maître de Conférences (Assistant professor), Computer Science, Université de Versailles, France.

#### Strong points :

- 38 publications in international journals
- Member of the editorial board of Annals of Combinatorics
- Principal investigator of the project IComb 2008-2013, 340k Euros, funded by the Agence Nationale de la Recherche (recommended for funding from the European Research Council, ranked 399 out of 9157 proposals in the first call "ERC starting grants").

#### Maternity leaves :

- April-August 2008 (Sisseline, born May 23rd 2008)
- March-August 2006 (Viggo, born April 10th 2006)

#### Education :

- 2010 (expected) : Habilitation in Computer Science, Université Paris-Diderot, France.
- Jan 2000 : PhD in Computer Science, Université Paris-Sud, France. Advisor : D. Gouyou-Beauchamps. Thesis title : "Enumerative problems in combinatorics, physics and computer science"
- May 1997 : Master of Science in Computer Science, North Carolina State University, USA. Advisor : C. D. Savage.
- June 1997 : Bachelor of Science, Computer Engineering, Université de Technologie de Compiègne, France.

#### Publications :

- S. Corteel and L.K. Williams, Staircase tableaux, the asymmetric exclusion process, and Askey-Wilson polynomials, to appear in *Proc. Natl. Acad. Sci. USA*.
- G.E. Andrews, S. Corteel, and C.D. Savage, On  $q$ -series identities arising from Lecture Hall partition, *Int. J. Number Theory*, to appear (2009).
- S. Corteel and P. Nadeau, Bijections for permutation tableaux, *Eur. J. Comb.*, to appear (2008).
- S. Corteel, J. Lovejoy et O. Mallet, An extension to overpartitions of the Rogers-Ramanujan identities for even moduli, *Journal of Number Theory* 128 (2008), 1602-1621.
- S. Corteel, I. M. Gessel, C. D. Savage, and H. S. Wilf, The joint distribution of descent and major index over restricted sets of permutations. *Ann. Comb.*, 11 (2007), no. 3-4, 375–386.
- S. Corteel and O. Mallet, Overpartitions, lattice paths, and the Rogers-Ramanujan identities. *J. Comb. Theory, Ser. A* 114 (2007), 1407–1437.
- S. Corteel and L.K Williams, A Markov chain on permutations which projects to the PASEP, *Int. Math. Res. Not.*, No. 17 (2007), article ID rnm055, 27p.
- S. Corteel, S. Lee, and C.D. Savage, Five Guidelines for Partition Analysis with Applications to Lecture Hall-type Theorems, in *Combinatorial Number Theory*, de Gruyter, Berlin (2007), 131–155. and *Integers* 7, No. 2, Paper A9 (2007).
- S. Corteel and L.K. Williams, Tableaux combinatorics for the asymmetric exclusion process, *Adv. Appl. Math*, 39, No. 3, (2007), 293–310.
- R. Brak, S. Corteel, J. Essam, R. Parviainen and A. Rechnitzer, A Combinatorial Derivation of the PASEP Stationary State, *Electronic Journal of Combinatorics*, 13: R108, (2006).
- S. Corteel, W. Goh and P. Hitczenko, A local limit theorem in the theory of overpartitions, *Algorithmica*, 46, No. 3-4, 329-343 (2006).
- S. Corteel, Crossings and alignments of permutations, *Adv. Appl. Math*, 38, No. 2, 149-163 (2007).
- S. Corteel, G. Louchard and R. Pemantle, Common Intervals in Permutations, *Discrete Math. Theor. Comput. Sci.* 8, No. 1, 189-216, (2006).
- S. Corteel and J. Lovejoy, An iterative-bijective approach to generalizations of Schur's theorem, *Europ. J. Combin.* 27 (2006), 496-512.
- S. Corteel, C.D. Savage and H.S. Wilf, A note on partitions and compositions defined by inequalities, *Integers* 5 (2005), no 1, A24, 11pp.
- S. Corteel, S. Lee and C.D. Savage, Enumeration of sequences constrained by the ratio of consecutive parts, *Sem. Lothar. Combin.* 54A (2005) Art. B54Aa, 12pp.
- S. Corteel, M. Valencia-Pabon and J. Vera, Approximating the  $b$ -chromatic number, *Discrete Appl. Math.*, 146 (2005) no 1, 106-110.
- S. Corteel and P. Hitczenko, Multiplicity and number of parts in overpartitions, *Ann. Combin.*, 8 (2004) 287-301.
- S. Corteel and C.D. Savage, Lecture Hall,  $q$ -series and truncated objects, *J. Comb. Theory, Ser. A*, 108 (2004) 217-245.

- S. Corteel, J. Lovejoy and A.J. Yee, Overpartitions and generating functions for generalized Frobenius partitions. Proceedings of the international colloquium of mathematics and computer sciences, Vienna, September 13-17, 2004. Basel: Birkhäuser. *Trends in Mathematics*, 15-24 (2004).
- S. Corteel and C.D. Savage, Partitions and compositions defined by inequalities, *Ramanujan J.*, (2004) 8, 357-381.
- S. Corteel and J. Lovejoy, Overpartitions, *Trans. Am. Math. Soc.*, 356 (2004), 1623-1635.
- S. Corteel, A. Goupil and G. Schaeffer, Content evaluation and class symmetric functions, *Adv. Math.*, 188 (2004) 315-336.
- S. Corteel, Particle seas and basic hypergeometric series, *Adv. Appl. Math.*, 31 (2003), no 1, 199-214.
- S. Corteel and C. D. Savage, Plane Partition Diamonds and Generalizations, *Integers*, Vol. 3, A9 (2003).
- S. Corteel and C.D. Savage, The anti-lecture hall compositions, *Discrete Math.*, Vol. 263, Nos. 1-3 (2003) 275-280 (Editor's choice).
- S. Corteel, M. Valencia-Pabon, D. Gardy, D. Barth and A. Denise, The Permutation-Path Coloring Problem on Trees, *Theor. Comput. Sci.*, 297 Nos 1-3(2003), 119-143.
- S. Corteel and D. Gouyou-Beauchamps, Enumerations of Sand Piles, *Discrete Math.*, 256 (2002) 3, 625-643.
- S. Corteel and J. Lovejoy, Frobenius Partitions and the combinatorics of Ramanujan's  ${}_{1}\psi_{1}$  summation, *J. Comb. Theory, Ser. A*, 97 (2002), no 1, 177-183.
- A. Burnstein, S. Corteel, A. Postnikov and C.D. Savage, A note on a lattice path approach to counting partitions with minimum rank, *Discrete Math.*, Vol. 249, Nos. 1-3 (2002) 31-39.
- E. Canfield, S. Corteel, P. Hitczenko, Random Partitions with non negative  $r^{th}$  difference, *Adv. Appl. Math* 27 (2001) 298-317.
- S. Corteel, A. Denise and D. Gouyou-Beauchamps, Bijections for directed animals on infinite families of lattices. *Ann. Combin* 4 (2000) 269-284.
- S. Corteel, G. Rémond, G. Schaeffer and H. Thomas, The number of plane corner cuts. *Adv. Appl. Math.* 23 (1999), no. 1, 49-53.
- S. Corteel, B. Pittel, C.D. Savage and H.S. Wilf, On the multiplicity of parts in a random partition. *Random Struct. Algorithms* 14 (1999), no. 2, 185-197.
- E.R. Canfield, S. Corteel, C.D. Savage, Durfee polynomials. *Electron. J. Comb.* 5 (1998), no. 1, R32, 21 pp.
- S. Corteel, C.D. Savage and R. Venkatraman, A bijection for partitions with all ranks at least t. *J. Combin. Theory, Ser. A* 83 (1998), no. 2, 202-220.
- S. Corteel, C.D. Savage, H.S. Wilf and D. Zeilberger, A pentagonal number sieve. *J. Combin. Theory Ser. A* 82 (1998), no. 2, 186-192.

#### Submitted papers

- S. Corteel and L.K. Williams, Tableaux combinatorics for the asymmetric exclusion process and Askey-Wilson polynomials.
- S. Corteel, M. Josuat-Vergès and L.K. Williams, Matrix Ansatz, Orthogonal Polynomials and Permutation tableaux.

- S. Corteel, D. Stanton and L.K. Williams, Moments of the weight function of the Askey Wilson Polynomials.
- S. Corteel, C. Savelief and M. Vuletic, Generating formulas for plane overpartitions and cylindric partitions.

#### Invited conferences :

- Jan 2010 : Journées de Combinatoire de Bordeaux, France.
- Oct 2009 : Etats de la recherche de la SMF, IHP, Paris.
- May 2009 : CanaDAM2009, Montreal, Canada (planery speaker).
- April 2009 : Applications of Algebraic and Geometric Combinatorics, AMS meeting, North Carolina State University, USA.
- March 2009 : Partitions and q-series, AMS meeting, University of Illinois UC, USA.
- December 2008 : Combinatory Analysis 2008, Penn State, USA.
- March 2008 : Partitions, q-series and modular forms, University of Florida, USA (trip cancelled due to pregnancy).
- Jan 2006 : Journées Partitions et  $q$ -series, Lyon, France.
- Nov 2004 : Additive Number Theory, University of Florida, USA.
- Feb 2004 : Permutations, Paths and Trees 2004, Nankai University, China.

#### Conferences with proceedings:

- Juillet 2009: S. Corteel, M. Josuat-Vergès, T. Prellberg and M. Rubey, Matrix Ansatz, lattice paths and rook placements, FPSAC2009, Autriche.
- June 2008 : S. Corteel and P. Nadeau, Bijections for permutation tableaux, FPSAC2008, Valparaiso, Chile.
- June 2007 : S. Corteel and L.K. Williams, A Markov chain that projects to the PASEP, FPSAC2007, Tianjin, China.
- Sept 2006 : S. Corteel, J. Lovejoy et O. Mallet, An extension to overpartitions of the Rogers-Ramanujan identities for even moduli, Fourth Colloquium on Mathematics and Computer Science, Nancy, France.
- June 2006 : S. Corteel and O. Mallet, Overpartitions, lattice paths, and the Rogers-Ramanujan identities, FPSAC2006, San-Diego.
- June 2005 : R. Brak, S. Corteel, A. Rechnitzer, J. Essam, A combinatorial derivation of the PASEP algebra, FPSAC2005, Sicile.
- June 2005 : S. Corteel, S. Lee and C.D. Savage, Enumeration of sequences constrained by the ratio of consecutive parts, FPSAC2005, Sicily.
- Sept 2004 : S. Corteel, G. Louchard and R. Pemantle, Common Intervals in Permutations, Third Colloquium on Mathematics and Computer Science, Vienne, Autriche.
- Sept 2004 : S. Corteel, J. Lovejoy and A.J. Yee, Infinite Generating function and Frobenius partitions, Third Colloquium on Mathematics and Computer Science, Vienne, Autriche.
- July 2003 : S. Corteel and J. Lovejoy, Overpartitions, FPSAC2003, Sweden.
- Sept 2002 : A. Bergeron, S. Corteel and M. Raffinot, The algorithmic of Gene Teams, WABI2002, Rome, Italy.
- July 2002 : S. Corteel and C.D. Savage, Compositions and partitions defined by inequalities, FPSAC2002, Melbourne, Australia.
- April 2002 : Random partitions with non-negative  $r$ th differences, LATIN'2002, Cancun, Mexico.

- Sept 2000 : S. Corteel and D. Gouyou-Beauchamps, Enumerations of Sand Piles, LACIM2000.
- June 2000 : S. Corteel, Séries génératrices exponentielles pour les ECO-systmes signés (poster), FPSAC'00, Moscow.
- April 2000 : D. Barth, S. Corteel, A. Denise, D. Gardy, and M. Valencia-Pabon, On the complexity of routing permutations on trees by arc-disjoint paths, LATIN'2000, Punta Del Este, Uruguay.
- June 1998 : S. Corteel, C.D. Savage and R. Venkatraman, Bijections for partitions with minimal rank  $t$  (poster), FPSAC'98, Toronto, Canada.
- July 1997 : E. R. Canfield, S. Corteel and C.D. Savage, Durfee Polynomials, FPSAC'97, Vienna, Austria, Volume 1, p 142-153.

#### **Seminars (last 12 months).**

- Mars 2010 : Séminaire Lotharingien de Combinatoire, Lyon.
- Fév 2010 : Séminaire physique théorique, CEA Saclay.
- Jan 2010 : Journées de combinatoire de Bordeaux.
- Jan 2010 : Séminaire Proba, Nancy.
- Jan 2010 : Séminaire ALGO, INRIA Rocquencourt.
- Juin 2009 : Journées Robert Cori, Bordeaux.
- Mai 2009 : Groupe de travail "Processus stochastiques, Matrices aléatoires", Paris.

#### **Invitations :**

- Dec 2005 : Instituto De Matematicas Y Fisica, Universidad de Talca, Chile.
- Jan-March 2005 : Semester in Algebraic combinatorics, Mittag-Leffler Institute, Sweden.
- March-April 2004 : Department of Mathematics and Statistics, University of Melbourne, Australia.
- Feb 2004 : Center for Combinatorics, Nankai University, Tianjin, China.
- Feb-April 2003 : Mathematics department, University of Wisconsin, Madison, USA.
- Feb-July 2001: LaCIM Université du Québec Montréal, Canada (Postdoctoral fellowship).

#### **Activities :**

- 2013 : Organization of FPSAC in Paris-Diderot.
- 2010 : Program committee of FPSAC.
- 2007- : Member of the editorial board of Annals of Combinatorics.
- 2006- : Member of the Conseil de Labo (Departmental Committee) and in charge of the offices of the Algo Team.
- 2006 : Referee for an NSERC (Canadian Science Foundation) grant.
- 2004 : Referee for a FONDECYT (Chilean Science Foundation) grant.
- 2004 : Program committee FPSAC04, Vancouver, Canada.
- 2003 : Program committee ALICE (satellite conference of SODA), Baltimore, USA.
- 2002: Organizing committee, conférence Maths-Infos, Versailles.
- 2002 : Program committee SMC02, Quebec, Canada.
- 2001-2002 : Member of the commission de spécialistes (hiring Committee), Computer Science Department, Versailles.

- Referee : Journal of Combinatorial Theory Series A, Integers, Random Structures and Algorithms, Discrete Maths, Theoretical Computer Science, Contemporary Mathematics, Advances in Applied Maths, Annals of Combinatorics, Electronic Journal of Combinatorics, FPSAC.
- Reviewer for MathSciNet.

#### Grants :

- 2008-2013 : ANR Jeune Chercheur IComb (340k Euros, PI). Project submitted to the ERC starting grant and recommended for funding (ranked 399 out of 9157 proposals). Not funded by Europe due to budget restrictions and funded by the ANR (French agency for research).
- 2006-2009 : ANR blanc Gamma (300k Euros, 20 participants from LIAFA, IGM and LIP6)
- 2004-2007 : ACI Jeunes Chercheurs (Junior grant 40000 euros, 4 participants).
- 2003-2005 : Joint NSF-CNRS grant with North Carolina State University and Drexel University (12000 euros for the french part).
- 2003-2004 : Bioinformatics PRISM-INRA (6000 euros).
- 2002-2003 : ATIP-Jeune chercheur CNRS (Personal junior grant 6000 euros).

#### Advising :

- March 2009-2011 : Postdoctorate advisor, Jang-Soo Kim (project IComb).
- Sept 2007- : PhD Advisor, Matthieu Josuat-Vergès, Université Paris-Sud.
- Spring 2007 : Master Advisor, Cyrille Savelief, MPRI, Université Paris 7.
- Spring 2005 : Master Advisor, Olivier Mallet, Paris 6.
- Spring 2003 : Undergraduate advisor, Alexis Lamiable, Université de Versailles.
- Spring 2002 : Master Co-advisor, Antoine Joulie, Université de Versailles.

#### Teaching :

- Autumn 2008 : Combinatorics (graduate, 15 hours), Master Parisien de Recherche en Informatique (MPRI).
- Autumn 2007 : Combinatorics (graduate, 15 hours), MPRI.
- Spring 2007 : Algorithms (undergraduate), Ecole Polytechnique and Combinatorics (graduate, 3 hours), MPRI.
- Autumn 2004 and 2005 : Combinatorics and Complexity, Université de Versailles (graduate, 12 hours, shared with H. Fournier).
- Autumn 2004 : Combinatorics (undergraduate, 15 hours, shared with A. Cortez).
- Spring 2004 and 2005 : Combinatorics and Bioinformatics, Université de Versailles (graduate, 12 hours, shared with L. Marsan and A. Denise).
- Spring 2002 : Undergraduate project, Université de Versailles.
- Autumn 2000 and 2001 : Architecture for computers, Université de Versailles (56 hours).
- Autumn 2000 : Maths for Computer Science, Université de Versailles (32 hours).
- Spring 2000, 1999 and 1998 : Algorithms and ADA, Université Paris Sud (64 hours).

- Spring 1997 : Algorithms, North Carolina State University (teaching assistant).
- Autumn 1995 : Data Structures, North Carolina State University (teaching assistant).